KOHLER®

INSTALLATION INSTRUCTIONS

THERMOSTATIC MIXING VALVE TRIM
K-T9493, K-T9494

1. BEFORE YOU BEGIN

IMPORTANT INSTRUCTIONS

READ AND SAVE FOR THE CONSUMER

⚠ **WARNING: Risk of scalding or other severe injury.**

- Before completing installation, the installer must set the maximum water temperature setting of this valve to minimize the risks associated with scalding hazards according to ASTM F 444.

The installer is responsible for installing the valve and adjusting the maximum water temperature of this thermostatic valve according to instructions.
This valve meets or exceeds ANSI A112.18.1M, ASSE 1016, and CSA B125.
If you do not understand any of the installation or temperature adjustment instructions in this document, in the United States please contact our Customer Service Department at **1-800-4-KOHLER**. Outside the U.S. please contact your distributor.

IMPORTANT: Please fill in the blanks below and on the valve label. Then insert these instructions into the plastic bag included with the valve package, and attach the plastic bag to the valve handle for the owner's reference.

THIS DEVICE HAS BEEN PRESET BY _____ OF _____ TO ENSURE A SAFE MAXIMUM TEMPERATURE. ANY CHANGE IN THE SETTING MAY RAISE THE DISCHARGE TEMPERATURE ABOVE THE LIMIT CONSIDERED SAFE, AND LEAD TO SCALDS.

DATE: _____

⚠ **CAUTION: Risk of scalding hazard.** This device has been calibrated at the factory to ensure a safe maximum water temperature. Any variance in settings or water inlet conditions from those used during factory calibration may raise the discharge temperature above the safe limit, and may present a scalding hazard. **Responsibility for installation and adjustment of this device in accordance with these instructions lies with the installer.**

⚠ **CAUTION: Risk of product damage.** This valve contains plastic and rubber components. Do not apply excessive heat to the valve body when you make solder connections. Do not apply flux or acids directly to the valve, as damage to the seals, plastic components, and trim finish may result. Do not apply petroleum-based lubricants to the valve components, as damage may result.

TOOLS AND MATERIALS REQUIRED

- Thermometer
- 3/4" nominal copper tubing and fittings
- Wrenches
- Thin-blade knife or screwdriver
- Thread sealant
- Solder and flux
- Hacksaw or tubing cutter
- Silicone Sealant (optional)

ABOUT THIS VALVE

- The thermostatic mixing valve cartridge does not contain an integral volume control/shut-off valve. You must install a separate volume control/shut-off valve (K-403) downstream of any valve outlet that does not have an integral shut-off valve. The K-400 thermostatic mixing valve requires separate volume control/shut-off valves downstream of each mixing valve outlet. Refer to Fig. #3.
- The K-401 thermostatic mixing valve contains a single volume control/shut-off valve for controlling the water flow through the shower outlet. When plumbing to the valve's bath outlet, you must install a separate volume control shut-off valve (K-403) downstream from the bath outlet. Refer to Fig. #3.
- **K-400 and K-401 thermostatic mixing valves do not have an integral aspirator.** For installations that use a bath diverter spout, **you must install a twin ell (K-9663)** with integral aspirator between the valve and the bath spout. If these thermostatic mixing valves are installed without an aspirator water will flow from the shower and bath spout at the same time. Refer to Fig. #3.
- Determine the correct drain size and capacity for your installation. If two thermostatic mixing valves are used together, water flow volumes of 24 gpm (1.51 lps) or more are possible, depending upon the water supply pressure.
- Determine the correct water heater size and capacity for your installation. A typical shower installation uses an approximate mix of 75% hot water and 25% cold. A custom shower application using three 2-1/2 gpm (.16 lps) showerheads can use about 45 gal. (170.3 l) of hot water in 8 minutes. Choose a water heater large enough for your installation.

NOTES

- Shut off the main water supply.
- Observe all local plumbing codes.
- Inspect the waste and supply piping for damage. Replace as necessary.
- The valve is calibrated to 104° F (40° C) at the first stop position, and the maximum temperature limit stop is positioned so the outlet water temperature does not exceed 120° F (49° C).
- Factory calibrated inlet conditions are:

  Hot and cold water pressure = 43-1/2 psi (3.05 kg/cm^2)

  Hot water supply temperature = 149° F (65° C)

  Cold water supply temperature = 59° F (15° C)
- If inlet conditions differ from those used during factory calibration, it may be necessary to re-calibrate the valve after installation. **The installer must check the mixed flow temperature after installation, and adjust the valve as needed according to the instructions.**
- This valve complies with ASME A112.181M, ASSE 1016, and CSA B125. The valve is listed with ASSE, CSA, and IAPMO/UPC.

ROUGHING-IN – K-400-K WITH K-T9494-7

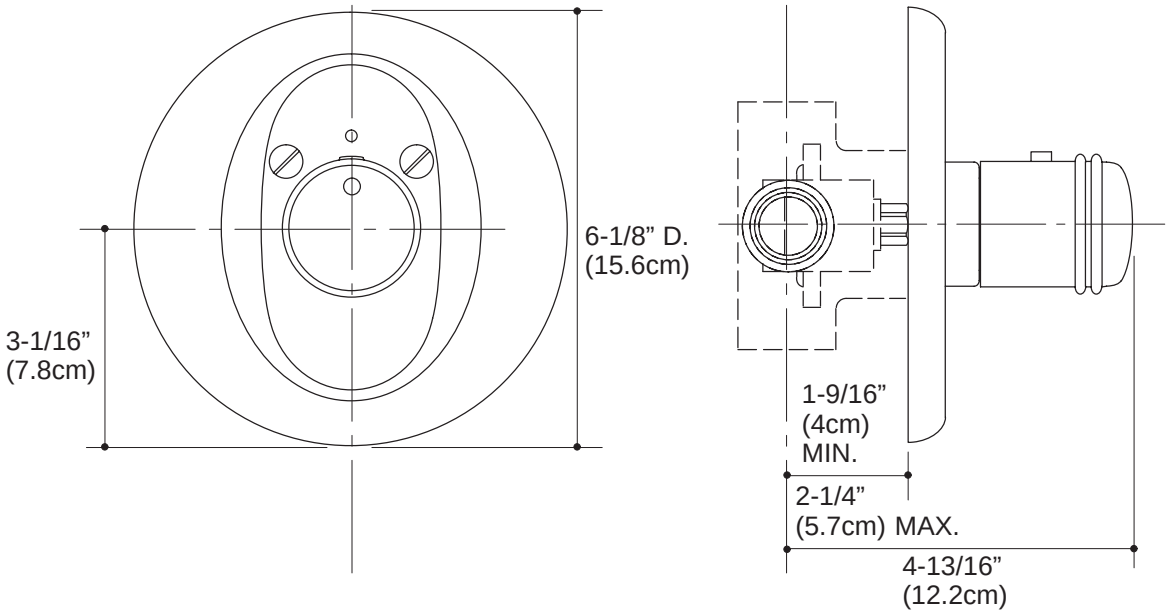

Fig. #1

ROUGHING-IN – K-401-K WITH K-T9493-4 OR K-T9493-7 TRIM

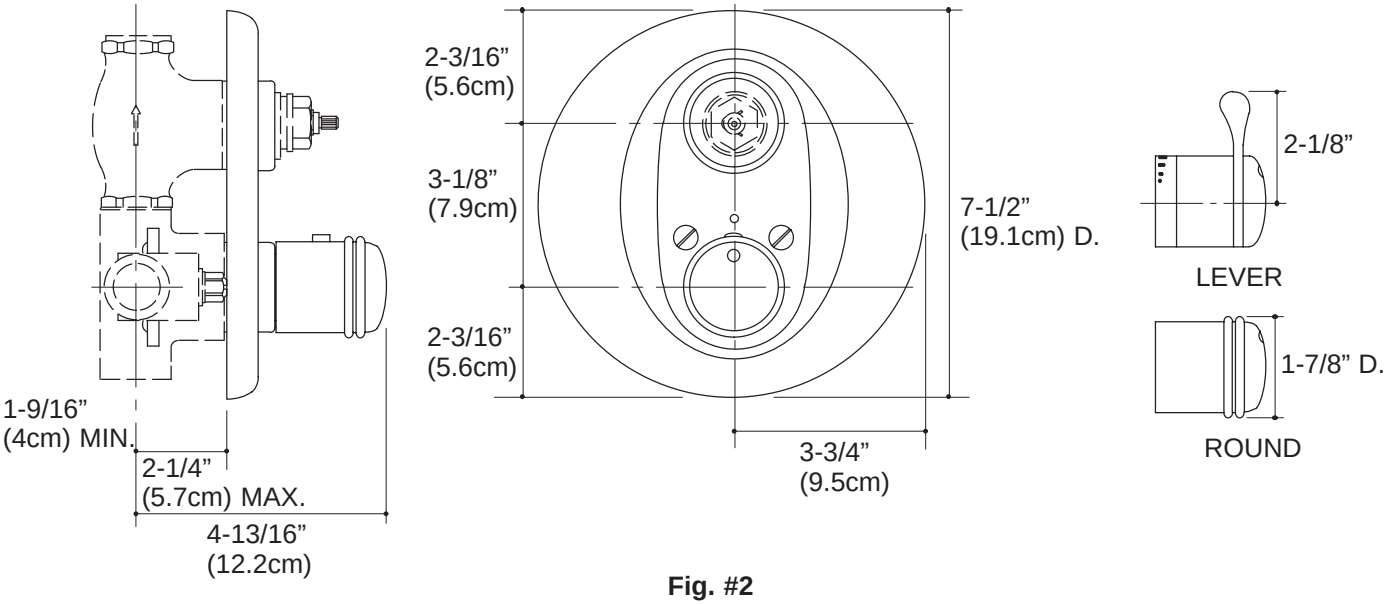

Fig. #2

2. COMPOSITE LAYOUT

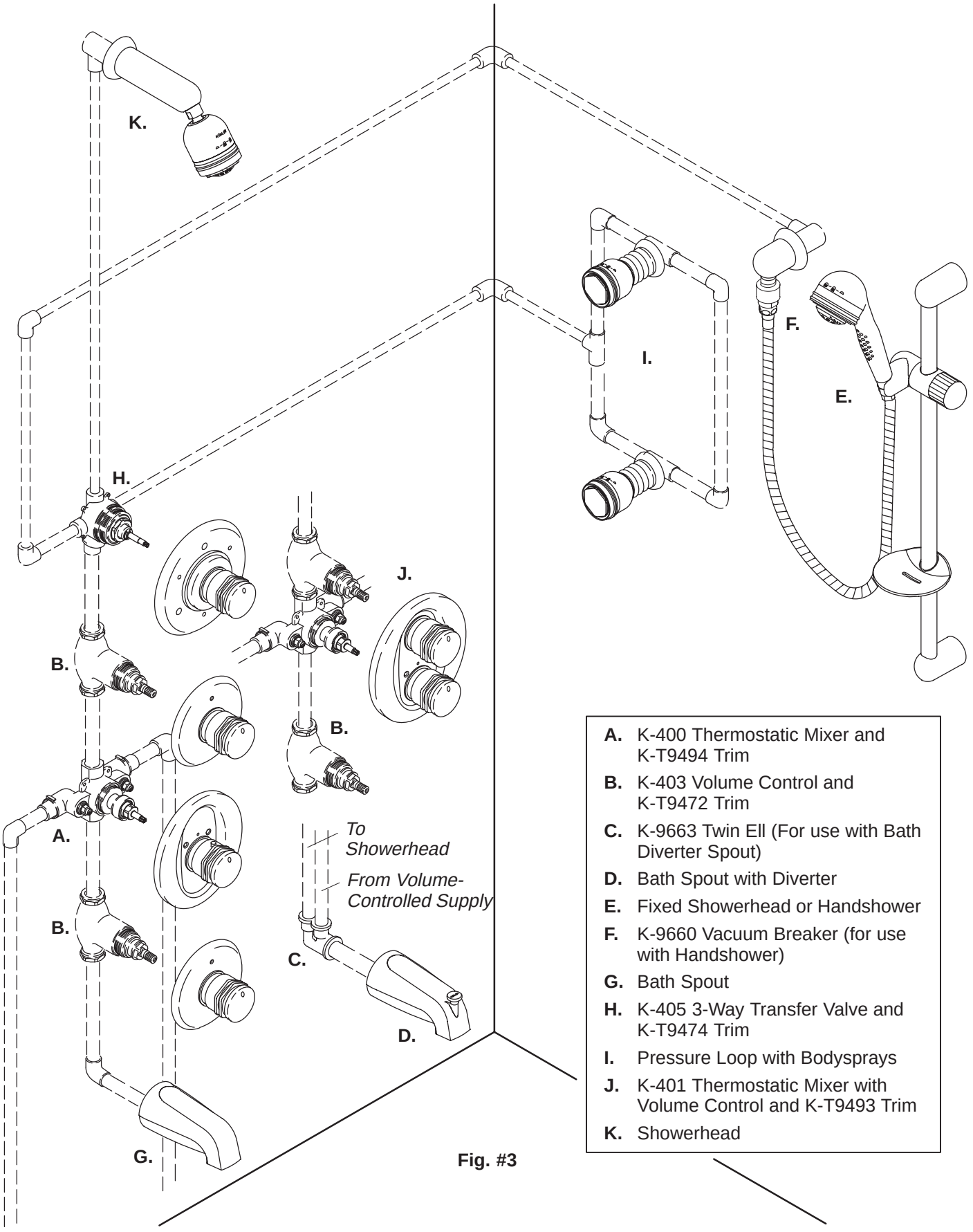

Fig. #3

- **A.** K-400 Thermostatic Mixer and K-T9494 Trim
- **B.** K-403 Volume Control and K-T9472 Trim
- **C.** K-9663 Twin Ell (For use with Bath Diverter Spout)
- **D.** Bath Spout with Diverter
- **E.** Fixed Showerhead or Handshower
- **F.** K-9660 Vacuum Breaker (for use with Handshower)
- **G.** Bath Spout
- **H.** K-405 3-Way Transfer Valve and K-T9474 Trim
- **I.** Pressure Loop with Bodysprays
- **J.** K-401 Thermostatic Mixer with Volume Control and K-T9493 Trim
- **K.** Showerhead

3. INSTALLATION

CONSTRUCT FRAMING AND INSTALL ROUGH PLUMBING

Determine the desired location for the valve according to the rough-in information on Page 3, and construct suitable stud and support framing.

Use 3/4” nominal copper tubing and fittings throughout this installation. Smaller diameter piping upstream or downstream of the valve will reduce the performance of the valve.

INSTALL VALVE

Flush the hot and cold water supply lines to remove any debris.

⚠ **CAUTION: Risk of product damage.** This valve contains plastic and rubber components. Do not apply excessive heat to the valve body when you make solder connections. Do not apply flux or acids directly to the valve, as damage to the seals and plastic components may result. Do not apply petroleum-based lubricants to the valve components, as damage may result.

Use thread sealant, and connect the 3/4” hot and cold water supply lines to the valve inlet ports. **Install water hammer arrestors in the supply lines.** The inlet ports are marked “HOT” and “COLD”, and must be connected to the correct water supply lines to ensure proper valve function. Make sure the integral volume control/shut-off valve on the K-401 is on top.

Connect the water outlet lines to the valve ports. Use a 3/4” plug for any unused outlet port.

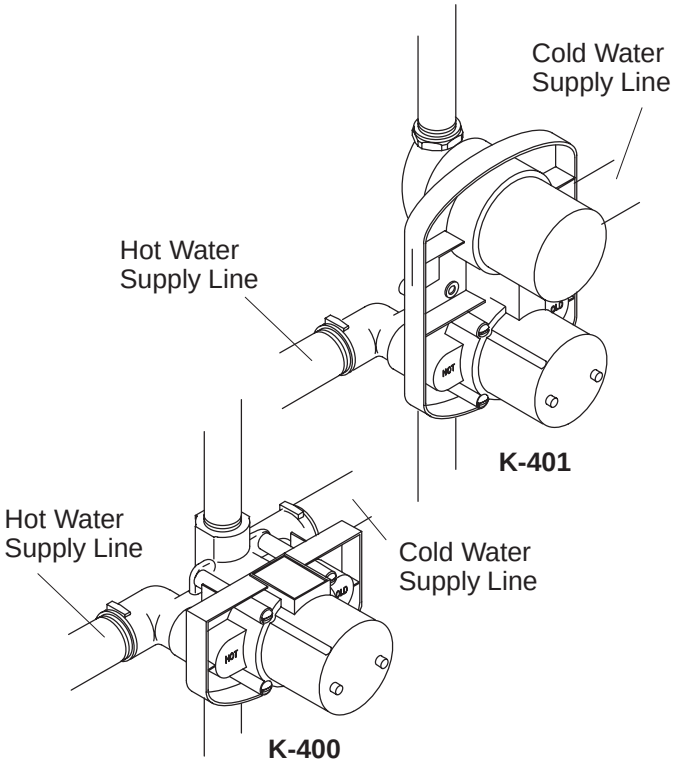

Fig. #4

The plaster guard is attached to the face of the mixing valve with two screws. Do not remove the plaster guard until instructed. Use the plaster guard to determine the depth of the valve in the wall, and to trace the cut-out line in the wall material. The finished wall surface must be within the MIN. – MAX. depth shown on the plaster guard.

Secure the water supply piping to the support framing.

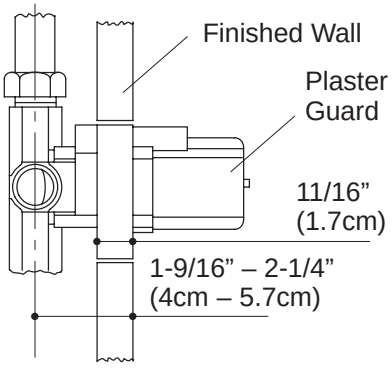

Fig. #5

⚠ **CAUTION: Risk of scalding hazard.** Do not turn the thermostatic mixing valve stem after you adjust the temperature setting until you install the mixing handle trim. This device has been calibrated at the factory to ensure a safe maximum water temperature. Any variance in settings or water inlet conditions from those used during factory calibration may raise the discharge temperature above the safe limit, and may present a scalding hazard.

K-400: Turn on the water supply lines to the valve, and check for leaks. Run water through the mixing valve and all showers and the spout, and check the system for leakage. Turn off the water.

K-401: Remove the plaster guard. **Do not** turn the thermostatic mixing valve stem until you have installed the handle trim.

Turn on the water supply lines to the valve, and check for leaks. Run water through the mixing valve and all showers and the spout, and check the system for leakage. Use the volume control/shut-off valve (top control) to control the water flow to the shower outlet. Turn off the water. Reinstall the plaster guard.

Complete the finished wall.

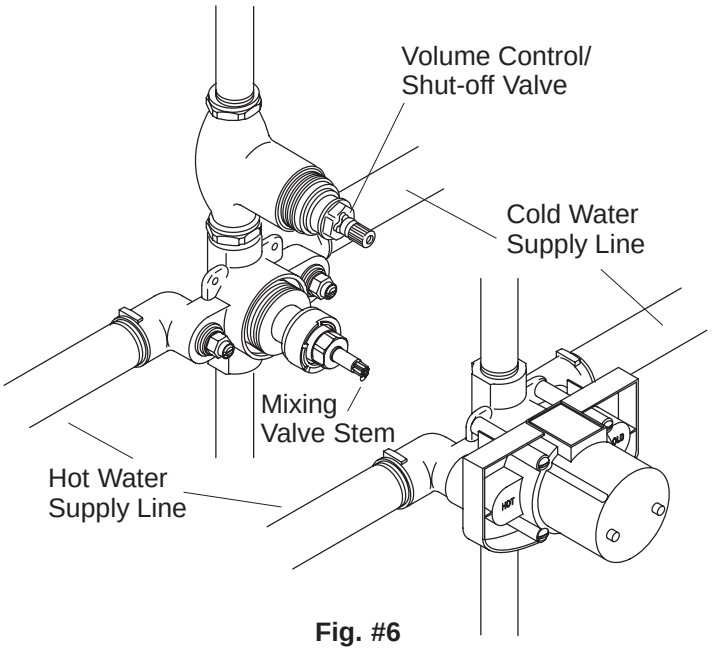

Fig. #6

ADJUST TEMPERATURE SETTINGS

This valve has been calibrated at the factory to provide 104° F (40° C) water at the mixing valve's first stop position. The maximum temperature limit stop has been adjusted so the maximum water temperature will not exceed 120° F (49° C).

NOTE: The listed water temperature settings are based upon the following factory conditions:

- Hot and cold water pressure = 43.5 psi (3.05 kg/cm^2)
- Hot water temperature = 149° F (65° C)
- Cold water temperature = 59° F (15° C)

If the actual water supply conditions differ significantly from those listed, you may need to re-calibrate the valve.

NOTE: Do not turn the thermostatic mixing valve stem at this time. Turning the mixing valve stem will change the factory calibration setting.

Turn the water on for several minutes, then position a thermometer in the water stream. If the existing water supply conditions match the factory conditions, the water temperature should be close to 104° F (40° C). If the water temperature is not close to 104° F (40° C), remove and discard the plaster guard if it is still attached.

Slowly rotate the thermostatic mixing valve stem until the water temperature is a constant 104° F (40° C). The white mark on the limit stop should be in line with the black mark on the mixing valve body. If necessary, carefully pry the limit stop off the valve cartridge with a thin blade, and re-install it so the white mark faces upward as required. The limit stop must be correctly positioned to ensure trim fit.

Do not turn the thermostatic mixing valve stem after you adjust the temperature setting until you have installed the mixing handle trim.

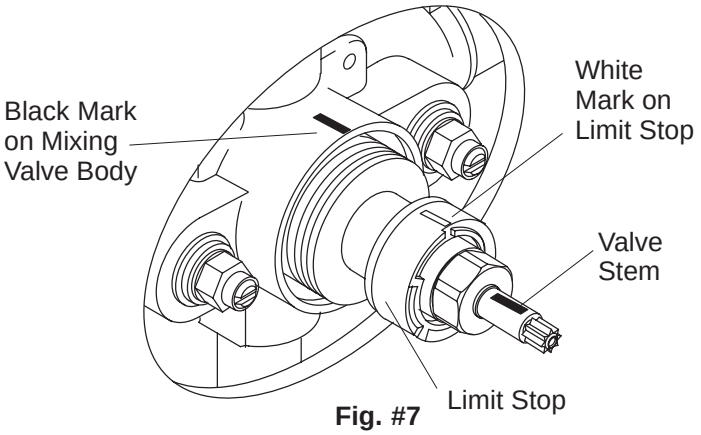

Fig. #7

INSTALL MIXING VALVE TRIM – ALL MODELS

Remove and discard the plaster guard if it is still in place.

Thread the collar(s) to the valve, and hand tighten.

Verify that each trim seal is correctly installed in an escutcheon hole. The seal(s) should be installed so the flat side faces outward, and the tapered side in.

Remove the backing from the adhesive gasket material. Starting at the escutcheon drain opening, carefully apply the gasket material around the back edge surface of the escutcheon. Trim away any excess gasket material so the escutcheon drain opening is not blocked.

Carefully slip the escutcheon over the collar(s) and against the finished wall. Position the escutcheon so the “Kohler” logo is to the top. Secure the escutcheon to the valve with two screws.

NOTE: For the K-400 mixing valve, proceed to Fig. #10, “Complete Trim Installation – All Models” .

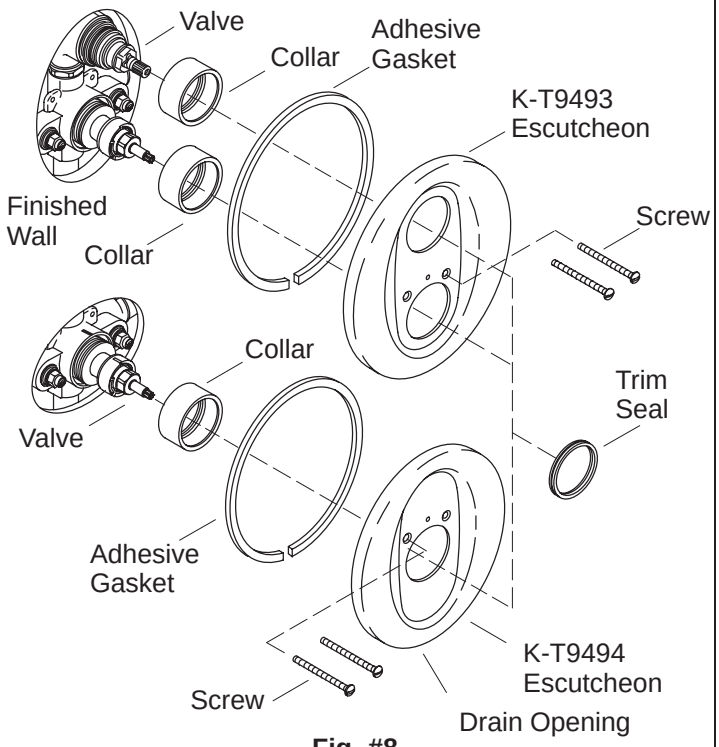

Fig. #8

INSTALL VOLUME CONTROL TRIM – K-401 VALVE

Rotate the volume control valve stem fully counterclockwise.

Press the volume control knob onto the volume control valve stem so the “Off” indicator graphic (smallest line) is to the top (toward the top escutcheon detent), as shown. Secure the volume control knob to the valve stem with the screw.

For Round Handle: Carefully install the thin O-ring into the first groove in the volume control knob. Fit the uninstalled grip ring into the second groove in the volume control knob.

For Lever Handle: Install the O-ring into the groove in the volume control knob.

For All Handles: Press the cap onto the volume control knob so the cap detent is in line with the “High” indicator graphic on the volume control knob.

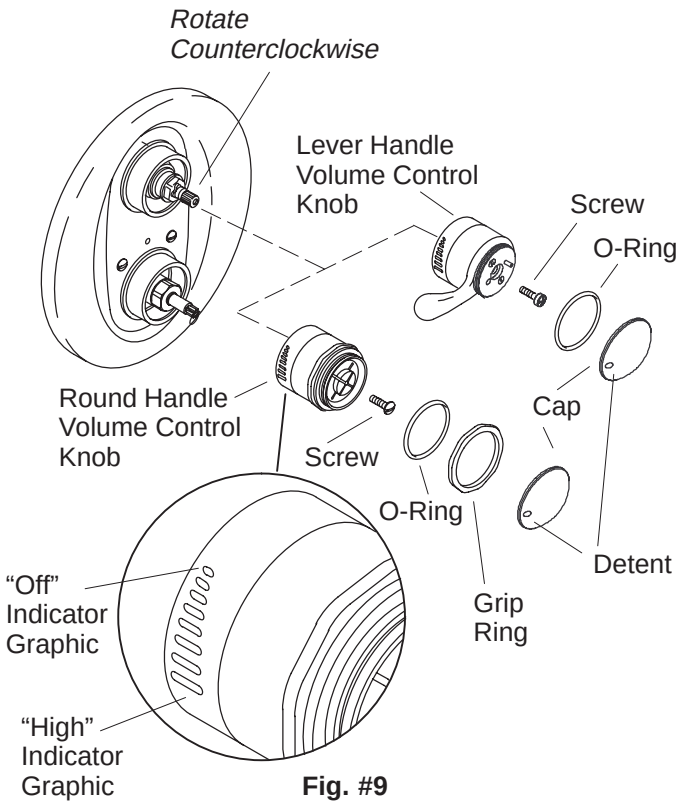

Fig. #9

COMPLETE TRIM INSTALLATION – ALL MODELS

Press the mixing valve knob onto the mixing valve stem so the knob button and “104” mark face upward (toward the escutcheon detent), as shown. Verify that the knob does not rotate counterclockwise. **Do not** press the knob button.

Turn on the water for a few minutes to allow the temperature to moderate. Then use a thermometer to check the water temperature. The water temperature should be 104° F (40° C).

If the water temperature is 104° F (40° C), press the knob button and rotate the knob fully counterclockwise so the “120” mark faces upward. Check the water temperature again. It should now be 120° F (49° C). Turn the knob clockwise so the “104” mark is upward. Again check the water temperature to make sure it is still 104° F (40° C). Turn off the water.

If the water temperature does not match the temperature indicated on the knob, repeat the mixing valve calibration steps according to the “Adjust Temperature Settings” section starting on Page 6.

Secure the mixing valve knob to the valve stem with the screw. Install the thin O-ring into the first groove in the knob. Carefully position the uninstalled grip ring into the second groove in the knob.

Press the cap onto the valve so the cap detent is in line with the knob button. If needed, apply a small amount of the supplied silicone lubricant (capsule included in hardware kit) to the inside wall of the cap to aid in assembly.

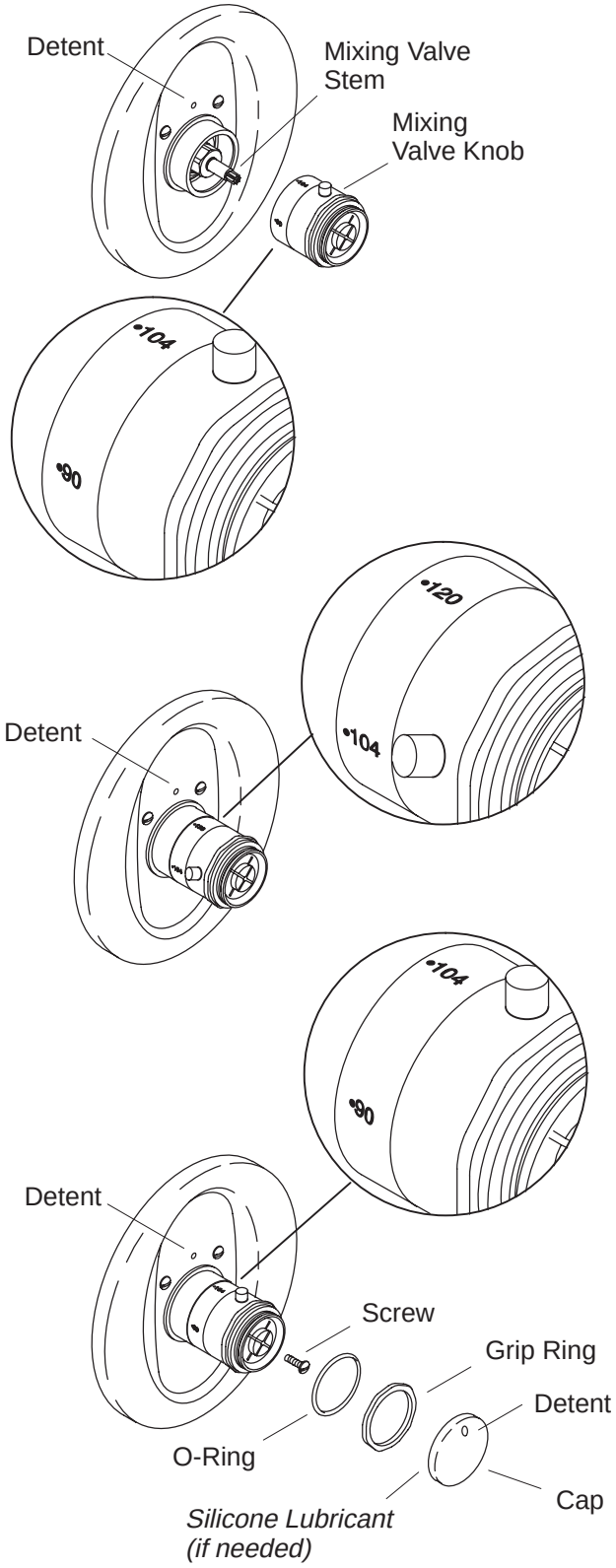

Fig. #10

CALL US FOR HELP

Questions? Problems? First review the installation instructions to ensure correct installation. For additional assistance, call our Customer Service Department for direct help. You may also contact us at our web site listed below.

In the U.S.A., call 1-800-4-KOHLER
In Mexico, call 001-877-680-1310
In Canada, call 1-800-964-5590

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